Listing of Claims:

Claim 1. (previously presented) A self-supporting reactive hot-melt adhesive element comprising:

a reactive one-component hot-melt adhesive which is solid at room-temperature, wherein said reactive one-component hot-melt adhesive comprises:

(i) 0.5 to 30% w/w relative to the reactive hot-melt adhesive element of at least one isocyanate which is solid or liquid at room-temperature, said at least one isocyanate being selected from the group consisting of:

(a) unsymmetrically substituted aliphatic and aromatic di- and polyisocyanates comprising isocyanate functions of different reactivity, and

(b) a mixture of at least two isocyanates selected from the group consisting of aliphatic and aromatic di- and polyisocyanates which are solid or liquid at room temperature wherein at least one of said di- and polyisocyanates of said mixture is an unsymmetrically substituted di- or polyisocyanate comprising isocyanate functions of different reactivity;

(ii) 20 to 90% w/w relative to the reactive hot-melt adhesive element of at least one isocyanate-reactive polymer and/or resin which is solid at room-temperature; and

(iii) at least one non-isocyanate-reactive polymer, wax and/or resin wherein the maximum amount of said at least one non-isocyanate reactive polymer, wax and/or resin is 60% w/w relative to the reactive hot-melt adhesive element;

wherein the content of free NCO-groups in said reactive hot-melt adhesive element is at least 0.5% w/w relative to the reactive hot-melt adhesive element; and

wherein said at least one non-isocyanate-reactive polymer, wax, and/or resin combines with said at least one isocyanate-reactive polymer and/or resin to form a matrix into which said at least one isocyanate is incorporated in homogenous distribution.

Claim 2. (canceled)

Claim 3. (currently amended) The reactive hot-melt adhesive element of claim 1, wherein said at least one isocyanate is an aliphatic and/or aromatic di- and/or polyisocyanate, with free terminal NCO-groups, said isocyanate being selected from the group consisting of diisocyanatodiphenylmethanes (MDIs), 4,4'-diisocyanatodiphenylmethane and 2,4'-diisocyanatodiphenylmethane and mixtures of diisocyanatodiphenylmethanes; 1,5-diisocyanatonaphthalene (NDI); diisocyanatotoluenes (TDIs), 2,4-diisocyanatotoluene, and TDI-urethdiones, dimeric 1-methyl-2,4-phenylene-diisocyanate (TDI-U), and TDI-carbamides; 1-isocyanato-3-isocyanatomethyl-3,5,5-trimethylcyclohexane (IPDI) and its isomers and derivatives, di-, tri- and polymerisates, and IPDI-isocyanurate (IPDI-T); 3,3'-dimethylbiphenyl-4,4'-diisocyanate (TODI); 3,3'-diisocyanato-4,4'-dimethyl-N,N'-diphenylcarbamide (TDIH); as well as mixtures thereof.

Claim 4. (previously presented) The reactive hot-melt adhesive element of claim 1, wherein the content of free NCO-groups in said reactive hot-melt adhesive element is at least 1% w/w, relative to the reactive hot-melt adhesive element.

Claim 5. (previously presented) The reactive hot-melt adhesive element of claim 1, wherein said least one isocyanate is a mixture of 4,4'-diisocyanatodiphenylmethane and 2,4'-diisocyanatodiphenylmethane, having a content of 2,4'-diisocyanatodiphenylmethane exceeding 20% w/w, relative to the isocyanate mixture.

Claim 6. (previously presented) The reactive hot-melt adhesive element of claim 1, wherein said least one isocyanate has masking and/or blocking groups, said groups being able to split off during exposure to heat and/or moisture.

Claim 7. (previously presented) The reactive hot-melt adhesive element of claim 1, wherein said least one isocyanate is an encapsulated or surface-deactivated isocyanate, said encapsulation or surface-deactivation being broken up at temperatures exceeding room-temperature.

Claim 8 (canceled)

Claim 9. (previously presented) The reactive hot-melt adhesive element of claim 1, wherein said least one isocyanate-reactive polymer and/or resin comprises at least two isocyanate-reactive groups or isocyanate-reactive hydrogen atoms per molecule.

Claim 10. (previously presented) The reactive hot-melt adhesive element of claim 1, wherein said least one isocyanate-reactive polymer and/or resin has an average molecular weight exceeding 8,000 g/mol, and/or said least one isocyanate-reactive polymer and/or resin is selected from the group consisting of isocyanate-reactive polymers and copolymers.

Claim 11 (canceled).

Claim 12 (canceled)

Claim 13. (previously presented) The reactive hot-melt adhesive element of claim 1, further comprising at least one catalyst, in amounts of from 0.01 to 5% w/w relative to the reactive hot-melt adhesive element, said catalyst being homogenously distributed over said least one isocyanate-reactive polymer and/or resin matrix and embedded herein, said catalyst being selected from the group consisting of organic tin compounds; organic iron, lead, cobalt, bismuth, antimony and zinc compounds and mixtures of these compounds; and catalysts based on amines.

Claim 14. (previously presented) The reactive hot-melt adhesive element of claim 1, wherein said non-isocyanate-reactive polymer, wax and/or resin is selected from the group consisting of:

(i) aliphatic, cyclic or cycloaliphatic hydrocarbon resins, terpene phenol resins, cumarone indene resins, α-methylstyrene resins, polymerized liquid resin esters and ketonaldehyde resins, with low acid values of less than 1 mg KOH/g;

(ii) ethylene/vinyl acetate polymers and copolymers, with vinyl acetate contents of between 12 and 40% w/w and/or with melt indices (MFIs, DIN 53735) of 8 to 800;

(iii) polyolefins, with average molecular weights of 5,000 to 25,000 g/mol, and/or with ring and ball softening ranges of between 80 and 170°C;

(iv) (meth)acrylates; and

(v) polyolefin waxes;

and mixtures of these compounds.

Claim 15. (canceled)

Claim 16. (previously presented) The reactive hot-melt adhesive element of claim 1, further comprising at least one isocyanate-reactive mono-functional additive, in an amount of from 0 to 20% w/w relative to the reactive hot-melt adhesive element, said least one mono-functional additive being selected from the group consisting of mono-functional amines, alcohols, mercaptans and mono-functional additives which comprise an isocyanate-reactive functional group.

Claim 17. (previously presented) The reactive hot-melt adhesive element of claim 1, wherein the individual constituents or contents are embedded and homogenously distributed in each other.

Claim 18. (previously presented) The reactive hot-melt adhesive element of claim 1, wherein said adhesive element is non-sticky or non-adhesive at room-temperature and becomes sticky or adhesive at temperatures above room-temperature, and begins to cross-link above room-temperature, and wherein the duration of cross-linking is less than 10 minutes.

Claim 19. (previously presented) The reactive hot-melt adhesive element of claim 18, wherein when the cross-linking process has been initiated via heating to a temperature above room-temperature, followed by immediate cooling to room-temperature, the duration of cross-linking is for about 5 to 8 days at room-temperature.

Claim 20. (previously presented) The reactive hot-melt adhesive element of claim 1, wherein said adhesive element cross-links during exposure to heat and/or moisture.

Claim 21. (previously presented). The reactive hot-melt adhesive element of claim 1, having a layer thickness of 10 μm to 1,000 μm.

Claim 22. (previously presented) The reactive hot-melt adhesive element of claim 1, in the form of a foil, film, strip or reactive adhesive tape, which may optionally be wound into a roll and/or stored in a cassette.

Claim 23. (previously presented) The reactive hot-melt adhesive element of claim 1, further comprising:

up to 25% w/w of at least one additive for improving heat conductivity and/or sensitivity to radiation induction;

said amounts being based on the reactive hot-melt adhesive element.

Claims 24 through 27 (canceled)

Claim 28. (previously presented) A process for manufacturing the reactive hot-melt adhesive element of claim 1, said process comprising:

a) mixing the individual constituents or contents, without a reaction between the individual constituents or contents taking place in the case of a solid isocyanate;

b) optionally, cooling or permitting to cool the resulting mixture or mass until said mixture or mass cools and/or hardens;

c) processing the mixture or mass to a film, optionally with heating to above room-temperature, but without a reaction between the individual constituents or contents taking place;

d) optionally, cooling or permitting the film to cool to room-temperature; and

e) optionally, further processing the film, into foils, or smaller pieces etc. and/or winding into rolls.

Claim 29. (previously presented) An adhesive bonding process for the permanent bonding of substrates to be joined, comprising:

a) providing a first and a second substrate to be bonded;

b) applying the reactive hot-melt adhesive element of claim 1 to at least a region of the first substrate, during exposure to heat and/or pressure, optionally while melting the reactive constituents and thereby initiating the cross-linking process;

c) joining said first and second substrates while contacting said second substrate with at least the region of the first substrate provided with the reactive hot-melt adhesive element;

d) pressing together said two substrates, while initiating the cross-linking process, during exposure to heat and/or moisture; and thereafter;

e) hardening or curing, optionally during exposure to pressure and/or heat and/or moisture.

Claim 30. (previously presented) An adhesive bonding process for the permanent bonding of substrates to be joined, comprising:

a) providing a first and a second substrate to be bonded and the reactive hot-melt adhesive element according to claim 1;

b) joining said first and second substrate with said reactive hot-melt adhesive element being positioned between said first and second substrates;

c) pressing together said first and second substrates joined together in step b), during exposure to heat and/or moisture, while melting the reactive constituents and thereby initiating the cross-linking process; and thereafter

d) hardening or curing, optionally during exposure to pressure and/or heat and/or moisture.

Claim 31. (previously presented) A self-supporting reactive hot-melt adhesive element, comprising:

a reactive one-component hot-melt adhesive which is solid at room-temperature, wherein said reactive one-component hot-melt adhesive comprises:

(i) 0.5 to 30% w/w relative to the reactive hot-melt adhesive element of a mixture of at least two aliphatic and/or aromatic di- and/or polyisocyanates which are solid or liquid at room-temperature wherein at least one of said di-and/or polyisocyanates in said mixture is an unsymmetrically substituted di- and/or polyisocyanate comprising isocyanate functions of different reactivity;

(ii) 20 to 90% w/w relative to the reactive hot-melt adhesive element of at least one isocyanate -reactive polymer and/or resin which is solid at room-temperature; and

(iii) at least one non-isocyanate-reactive polymer, wax and/or resin wherein the maximum amount of said non-isocyanate-reactive polymer, wax and/or resin is 60 % w/w relative to the reactive hot-melt adhesive element;

wherein the content of free NCO-groups in said reactive hot-melt adhesive element is at least 0.5% w/w relative to the reactive hot-melt adhesive element; and

wherein said at least one non-isocyanate-reactive polymer, wax and/or resin combines with said at least one isocyanate-reactive polymer and/or resin to form a matrix into which said at least one isocyanate is incorporated in homogenous distribution.

Claim 32. (previously presented) The reactive hot-melt adhesive element of claim 31, wherein said isocyanate mixture comprises a mixture of 4,4'-diisocyanatodiphenylmethane and 2,4'-diisocynatodiphenylmethane, the content of 2,4'-diisocyanatodiphenylmethane exceeding 20% w/w, relative to the isocyanate mixture.

Claim 33. (previously presented) A process for manufacturing the reactive hot-melt adhesive element of claim 31, said process comprising:

a) mixing the individual constituents or contents, without a reaction between the individual constituents or contents taking place in the case of a solid isocyanate;

b) optionally, cooling or permitting to cool the resulting mixture or mass until said mixture or mass cools and/or hardens;

c) processing the mixture or mass to a film, optionally with heating to above room-temperature, but without a reaction between the individual constituents or contents taking place;

d) optionally, cooling or permitting the film to cool to room-temperature; and

e) optionally, further processing the film, into foils, or smaller pieces etc. and/or winding into rolls.

Claim 34. (previously presented) An adhesive bonding process for the permanent bonding of substrates to be joined, comprising:

a) providing a first and a second substrate to be bonded;

b) applying the reactive hot-melt adhesive element of claim 31 to at least a region of the first substrate, during exposure to heat and/or pressure, optionally while melting the reactive constituents and thereby initiating the cross-linking process;

c) joining said first and second substrates while contacting said second substrate with at least the region of the first substrate provided with the reactive hot-melt adhesive element;

d) pressing together said two substrates, while initiating the cross-linking process, during exposure to heat and/or moisture; and thereafter;

e) hardening or curing, optionally during exposure to pressure and/or heat and/or moisture.

Claim 35. (previously presented) An adhesive bonding process for the permanent bonding of substrates to be joined, comprising:

a) providing a first and a second substrate to be bonded and the reactive hot-melt adhesive element according to claim 31;

b) joining said first and second substrate with said reactive hot-melt adhesive element being positioned between said first and second substrates;

c) pressing together said first and second substrates joined together in step b), during exposure to heat and/or moisture, while melting the reactive constituents and thereby initiating the cross-linking process; and then

d) hardening or curing, optionally during exposure to pressure and/or heat and/or moisture.